**IT Applications Unit 3, AOS 1, Online Communities**

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Complete the following, from pgs, 14-18: **Network communication standards**

**Networks are classified according to below and we will study the following:**

**• Network Categories: LAN, WAN**

**• Network Architecture, client-server; peer-to-peer; internet peer-to-peer; intranet**

**• Network communication standards**

**• Network hardware and software**

**• Transmission media**

**• Network security**

**Network communication standards**

• **Why are network standards required?** Network standards are required to ensure that compatibility problems between various software and hardware on a network can be overcome.

• **What is a protocol?** A protocol is a standard that defines how two devices on a network transmit data between them. It determines error checking, the 'sent' message and the 'received' message on either end.

• **What is the OSI?** The Open Systems Interconnection is a standard for network communication that creates a model for using protocols in seven layers. (So basically, a standard that helps define some other standards)

**Ethernet**

• **Describe the nature of Ethernet.** Ethernet is a network standard in which devices all connected to a single cable are able to communicate with each other. (basically, peer-to-peer) If devices are connected or disconnected they are (respectively) added or removed from the Ethernet system, meaning no change to the actual devices are needed when adding new devices.

• **What are frames?** Frames are packets of information communicated between devices, containing the destination node address (where the device is on the Ethernet), the sending node address and data.

• **Identify the 4 components of all Ethernet frames.** An Ethernet frame contains data, destination node address, sending node address and parity check information.

• **Fig. 1-9 on p 17 lists the Ethernet type, cable type, maximum length and transfer rate for Ethernet transmissions. The College typically uses 100BaseTX, Cat 5 or10Gbase-T. What are their respective maximum lengths and transfer rates?** 85 m, 100 Mbps; and 85m, 10 Gbps.

**TCP/IP**

• **Describe the nature of TCP/IP.** The TCP/IP is the protocol that the internet is made from. It specifies the rules used to construct 'packets' of data, the address scheme for sending and receiving devices, an error-checking mechanism and how the flow of messages around the network is regulated.

• **TCP/IP uses smaller packets than other protocols. Why is this an advantage on the internet?** Smaller packets give more options for the network management software to enable load balancing. Each packet could be sent along a different route and re-assembled into the full set of data at the end.

**802.11 wireless standard**

**1 What does this standard do?** The 802.11 wireless standard defines how computers can use radio waves to communicate.

**2 What is a Wi-Fi network?** A Wi-Fi network is a network which uses the 802.11 wireless standard. Computers that are up to 50 metres apart can be connected in this way.

**3 Different wireless standards transmit at different frequencies. What is the advantage of the newer 802.11n standard?** The advantage of the new 802.11n standard is that it can transmit at both 5 GHz and 2.4 GHz, is faster, and supports a larger range (apps 70 metres indoors).